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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/973,114	10/10/2001	Shuichi Takeuchi	P21220	4678

7055 7590 02/06/2003

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EXAMINER
RAIZEN, DEBORAH A

ART UNIT	PAPER NUMBER
2873	

DATE MAILED: 02/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/973,114	TAKEUCHI ET AL.	
	Examiner	Art Unit	
	Deborah A. Raizen	2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-8,10 and 11* is/are rejected.

7)☒ Claim(s) *2 and 9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 October 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: the description in paragraph [0017] on pages 6-7 appears to differ from claim 9. Specifically, in claim 9 the second laser beam, which has a longer wavelength, also has more divergence than the first laser beam. Line 25 on page 6 and line 1 on page 7 state the opposite, apparently in error.

Appropriate correction is required.

Claim Objections

2. Claim 11 is objected to because of the following informalities: claim 11 is directed to an objective lens whereas claim 7, on which claim 11 is based, is directed to an optical system. It is therefore not clear if claim11 includes the limitations of the optical system other than the objective lens. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 5, 7, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Londono et al. (5,260,828). In regard to claim 1, Londono discloses a single element (col. 1, lines 55-61) objective lens for an optical disc drive (col. 1, lines 52-54), said objective lens converging a laser beam emitted by a laser source on a data recording surface of an optical disc (col. 1, lines 52-54; a compact disk is a type of optical disc) through a protective layer of the optical disc (inherently part of the usual compact disk, as disclosed in Shiono et al. (6,487,016), col. 4, lines 47-48), wherein one surface of said objective lens (the second surface from left in Fig. 1 of Londono) is divided into a central area including an optical axis of said objective lens (labeled 44) and a peripheral area surrounding said central area (from the first annular step to the outer edge), said central area being formed as a continuous surface having no stepped portions (the central area, labeled 44, has no steps), said peripheral area is provided with a diffraction lens structure (kinoform 20, col. 3, lines 23-27; kinoform defined in col. 2, lines 26-27) formed by a plurality of concentric annular zones including minute steps (annular grooves 22, col. 3, lines 27-28), said diffraction lens structure being configured to compensate for variation of converging characteristic of said objective lens due to a change of a temperature (col. 2, lines 31-34).

In regard to claim 5, Londono discloses a single element (col. 1, lines 55-61) objective lens for an optical disc drive (col. 1, lines 52-54), said objective lens converging a laser beam emitted by a laser source on a data recording surface of an optical disc (col. 1, lines 52-54) through a protective layer of the optical disc (inherently part of the usual compact disk, as disclosed in Shiono et al. (6,487,016), col. 4, lines 47-48), wherein one surface of said objective lens (the second surface from left in Fig. 1 of Londono) is divided into a central area including an optical axis of said objective lens (labeled 44) and a peripheral area surrounding said central

area (from the first annular step to the outer edge), a diffraction lens structure formed by a plurality of concentric annular zones including minute steps being formed only in said peripheral area (annular grooves 22, col. 3, lines 27-28; the steps are not formed in the central area, labeled 44 in Fig. 1), said diffraction lens structure being configured to compensate for variation of converging characteristic of said objective lens due to a change of a temperature (col. 2, lines 31-34).

In regard to claim 7, Londono discloses an optical system of an optical head for an optical disc drive (col. 1, lines 52-54), comprising: a laser source unit that emits a laser beam (col. 1, line 53 inherently discloses a laser source unit because a laser source unit is essential for generating a laser beam); and a single element (col. 1, lines 55-61) objective lens that converges a laser beam emitted by said laser source unit on a data recording surface of an optical disc (col. 1, lines 52-54) through a protective layer of the optical disc (inherently part of the usual compact disk, as disclosed in Shiono et al. (6,487,016), col. 4, lines 47-48), wherein one surface of said objective lens (the second surface from left in Fig. 1 of Londono) is divided into a central area including an optical axis of said objective lens (labeled 44) and a peripheral area surrounding said central area (from the first annular step to the outer edge), said peripheral area being provided with a diffraction lens structure formed by a plurality of concentric annular zones including minute steps (annular grooves 22, col. 3, lines 27-28), said diffraction lens structure being configured to compensate for variation of converging characteristic of said objective lens due to a change of a temperature (col. 2, lines 31-34).

In regard to claim 8, in the Londono optical system, central area is formed as a continuous surface having no stepped portions (the central area, labeled 44 in Fig. 1, is a continuous surface with no steps).

5. Claims 1, 3, 7, and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Maruyama (6,191,889). The applied reference has a common inventor and assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

In regard to claim 1, Maruyama discloses a single element objective lens for an optical disc drive (col. 1, lines 5-7), said objective lens converging a laser beam emitted by a laser source on a data recording surface of an optical disc through a protective layer of the optical disc (col. 4, lines 28-30), wherein one surface of said objective lens is divided into a central area including an optical axis of said objective lens (the area within the innermost ring in Fig. 1A) and a peripheral area surrounding said central area (the area outside the innermost ring in Fig. 1A), said central area being formed as a continuous surface having no stepped portions (the area within the innermost ring has no steps), said peripheral area is provided with a diffraction lens structure formed by a plurality of concentric annular zones including minute steps (Abstract, lines 2-3 and Fig 1A), said diffraction lens structure being configured to compensate for

variation of converging characteristic of said objective lens due to a change of a temperature (col. 1, line 58-60).

In regard to claim 3, in the Maruyama objective lens, the diffraction lens structure is configured to have a characteristic in terms of a spherical aberration such that the spherical aberration changes in an under corrected direction when a wavelength of the laser beam incident on said objective lens increases (Abstract, lines 9-11).

In regard to claim 7, Maruyama discloses an optical system of an optical head for an optical disc drive (col. 1, lines 5-7), comprising: a laser source unit that emits a laser beam (col. 2, lines 7-8); and a single element objective lens (col. 4, lines 23-27) that converges a laser beam emitted by said laser source unit on a data recording surface of an optical disc through a protective layer of the optical disc (col. 4, lines 28-30), wherein one surface of said objective lens is divided into a central area including an optical axis of said objective lens (the area within the innermost ring in Fig. 1A) and a peripheral area surrounding said central area (the area outside the innermost ring in Fig. 1A), said peripheral area being provided with a diffraction lens structure formed by a plurality of concentric annular zones including minute steps (Abstract, lines 2-3 and Fig 1A), said diffraction lens structure being configured to compensate for variation of converging characteristic of said objective lens due to a change of a temperature (col. 1, line 58-60).

In regard to claim 11, in the Maruyama objective lens, the diffraction lens structure has a characteristic in terms of a spherical aberration such that the spherical aberration of said objective lens changes in an under corrected direction when a wavelength of the laser beam incident on said objective lens increases (Abstract, lines 9-11).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 4, 6, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Londono (5,260,828) in view of Kiriki et al. (6,349,083) and further in view of applicants' admission in "Background of the Invention" that the index of refraction of a plastic lens decreases as temperature increases (p. 1, lines 6-7 or paragraph [0004]). In regard to claim 4, Londono discloses an objective lens according to claim 1 (rejected above under 35 U.S.C. 102(b)) that is formed of plastic (col. 3, lines 20-21), a refractive index of which is lowered when the temperature increases (an inherent property of the Londono objective lens, by applicants' admission cited above). However, Londono does not disclose that a wavelength of the laser beam increases when the temperature increases. Kiriki discloses a plastic objective lens with a diffraction surface (col. 10, lines 13-15 and 20-21; Fig. 20), for use in a recording, reproducing apparatus for a compact disk (col. 9, lines 3-4), in which a wavelength of the laser beam increases when the temperature increases (col. 10, lines 24-25). Furthermore, Kiriki teaches that the use of such a laser beam is desirable because the resultant stronger power of the diffraction surface offsets the reduction in power of the plastic lens with increasing temperature (col. 10, lines 24-28). Therefore, it would have been obvious to one of ordinary skill in the art to use the Londono objective lens with a laser beam whose wavelength increases when the temperature

increases because the resultant power increase of the diffraction surface with temperature offsets the reduction in power of the plastic lens with temperature.

In regard to claim 6, Londono discloses an objective lens according to claim 5 (rejected above under 35 U.S.C. 102(b)) that is formed of plastic (col. 3, lines 20-21), a refractive index of which is lowered when the temperature increases (an inherent property, by applicants' admission cited above). However, Londono does not disclose that a wavelength of the laser beam increases when the temperature increases. Kiriki discloses a plastic objective lens with a diffraction surface (col. 10, lines 13-15 and 20-21; Fig. 20), for use in a recording, reproducing apparatus for a compact disk (col. 9, lines 3-4), in which a wavelength of the laser beam increases when the temperature increases (col. 10, lines 24-25). Furthermore, Kiriki teaches that the use of such a laser beam is desirable because the resultant stronger power of the diffraction surface offsets the reduction in the power of the plastic lens with increasing temperature (col. 10, lines 24-28). Therefore, it would have been obvious to one of ordinary skill in the art to use the Londono objective lens with a laser beam whose wavelength increases when the temperature increases because the resultant power increase of the diffraction surface with temperature offsets the reduction in power of the plastic lens with temperature.

In regard to claim 10, Londono discloses an objective lens according to claim 7 (rejected above under 35 U.S.C. 102(b)) that is formed of plastic (col. 3, lines 20-21), a refractive index of which is lowered when the temperature increases (an inherent property, by applicants' admission cited above). However, Londono does not disclose that a wavelength of the laser beam increases when the temperature increases. Kiriki discloses a plastic objective lens with a diffraction surface (col. 10, lines 13-15 and 20-21; Fig. 20), for use in a recording, reproducing apparatus

for a compact disk (col. 9, lines 3-4), in which a wavelength of the laser beam increases when the temperature increases (col. 10, lines 24-25). Furthermore, Kiriki teaches that the use of such a laser beam is desirable because the resultant stronger power of the diffraction surface offsets the reduction in the power of the plastic lens with increasing temperature (col. 10, lines 24-28). Therefore, it would have been obvious to one of ordinary skill in the art to use the Londono objective lens with a laser beam whose wavelength increases when the temperature increases because the resultant power increase of the diffraction surface with temperature offsets the reduction in power of the plastic lens with temperature.

Double Patenting

8. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

9. Claim 11 is rejected under 35 U.S.C. 101 as claiming the same invention as that of claim 1 of prior U.S. Patent No. 6,191,889. This is a double patenting rejection.

Claim 11 (which includes the limitations of its base claim 7) is identical in scope to claim 1 of the patent. The two claims differ only in wording as follows:

Base claim 7 includes the element “a laser source unit that emits a laser beam,” and claim 1 of the patent does not. However, the term “optical head” inherently includes a laser source unit

as disclosed in both the current application and in the patent. Also, the limitation in base claim 7, "that converges a laser beam emitted by said laser source unit on a data recording surface of an optical disc through a protective layer of the optical disc," is inherently included in claim 1 of the patent because the words "objective lens for an optical head" mean the same, as can be seen in title of current the application.

Furthermore, base claim 7 includes the limitation, "said diffraction lens structure being configured to compensate for variation of converging characteristic of said objective lens due to a change of a temperature." Claim 1 inherently includes this limitation in its limitation "said diffractive grating is configured such that spherical aberration changes in the undercorrected direction as wavelength of incident light increases," because the wavelength inherently increases as a result of a rise in temperature (col. 2, lines 8-10 of the patent discloses that the wavelength inherently increases as temperature rises, thereby showing the inherency in the claim).

Base claim 7 also includes the limitation "a single element." This limitation is inherent in claim 1 of the patent because the limitation, "a diffractive grating . . . on at least one lens surface of said refractive lens," shows that a single element lens is claimed.

Conversely, claim 1 of the patent includes the element "a refractive lens having a positive refractive power." Base claim 7 inherently includes this element because the element, "a single element objective lens that converges a laser beam," requires a refractive lens of positive power.

Allowable Subject Matter

10. Claims 2 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter: The prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of claims 2 and 9, in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper.

The prior art fails to teach a combination of all the claimed features as presented in claim 2. For example, these features include the detailed structure recited in claim 1 and also the limitation that the area of the peripheral area is not greater than area of the central area.

The prior art fails to teach a combination of all the claimed features as presented in claim 9. For example, these features include the detailed structure recited in claim 7 and also the details of an optical system that converges laser beams of different wavelengths on different types of optical discs.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah A. Raizen whose telephone number is (703) 305-7940. The examiner can normally be reached on Monday-Friday, from 8 a.m. to 4:30 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on (703) 308-4883. The fax phone numbers for the

organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

dar
February 3, 2003

Georgia Epps
Supervisory Patent Examiner
Technology Center 2800